

L031000000 - Cook County
LAKE CALUMET SMELTING COMPANY
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HRS SF

CERCLA

Pre-Cerclis Screening Action



Illinois Environmental
Protection Agency

EPA Region 5 Records Ctr.



296278

PRE-CERLIS SCREENING ASSESSMENT

for:

**LAKE CALUMET SMELTING COMPANY
CHICAGO, ILLINOIS**

ILD (PENDING)

**PREPARED BY:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF LAND
FEDERAL SITE REMEDIATION SECTION
SITE ASSESSMENT UNIT**

SEPTEMBER 10, 2004

PRE-CERCLIS SCREENING ASSESSMENT
LAKE CALUMET SMELTING COMPANY

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1.0 INTRODUCTION

INTRODUCTION

On October 18, 2003, the Illinois Environmental Protection Agency's (IEPA) Office of Site Evaluation (OSE) was tasked by the U.S. Environmental Protection Agency (USEPA) Region V to conduct a Pre-CERCLIS Screening Assessment (PCS) of the Lake Calumet Smelting Company facility located in Chicago, Illinois. The PCS was performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) commonly known as Superfund.

The Pre-CERCLIS Screening Assessment was designed to tentatively identify potential sources of contamination, and if present, determine if they pose the potential to adversely impact nearby residents or the surrounding environment. If during the course of this investigation a determination is made that the site possesses the potential to significantly impact human health and/or the environment, the site will be entered into EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and progress through the Superfund process. The PCS evaluation will also collect enough data to complete the Pre-CERCLIS Screening Assessment Checklist Form (Attachment A, under separate cover of PRESCORE). IEPA's OSE conducted the Pre-CERCLIS investigation of the Lake Calumet Smelting facility as a result of a request by USEPA Region V to further investigate this site.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

On August 10, 2004 personnel from the Illinois Environmental Protection Agency's Office of Site Evaluation conducted a Pre-CERCLIS Screening Assessment reconnaissance and evaluation of the Lake Calumet Smelting Company facility located in Chicago, Illinois. Lake Calumet Smelting Company is an inactive, abandoned metal producing operation located at 11901 S. Champlain Ave., Chicago, Illinois in Hyde Park Township, Cook County (see Figures 1 & 2). Lake Calumet Smelting is located at the southern end of the City of Chicago, approximately 3000 feet south of E. 115th Street. Interstate 94 is visible approximately 1500 feet east of the facility. Company operations consisted of secondary smelting of non-ferrous metals such as lead and tin into bulk units of babbitt and solder available for shipping to customers. It is currently not known if any metal fabrication processes were carried out at this facility. According to the Cook County Assessors Office the facility's former structure, driveway and parking areas occupy a rectangular shaped property on approximately 5.7 acres of land at the mentioned location. The company is situated in an urban/industrial setting within the City of Chicago. Bordering the property on the north is 119th Street (unpaved and currently not in use as a street), beyond which is an open mowed grass field that is part of the Sherwin-Williams Paint Co. property; on the east is bare, filled, open property that is a portion of a storage tank container company, beyond which is I-94; on the south is bare, filled, open property that is another portion of the storage tank container company; and to the west is S. Champlain Ave. (unpaved and currently not used as a street), beyond which are railroad siding tracks and an unknown manufacturing company.

(Figure 3).

The site consists of a large concrete building foundation and floor with the remains of a smoke stack still present. It also appears that the demolished remains of cinder block, brick, and wood structures are present on the northwest quarter of the foundation and floor. No other former facility structures are present or visible. Chainlink fencing topped with barbed wire surrounds the former facility. Also present around the perimeter of the facility are young to mature trees, overgrown brush and weeds, and gravel, cinder and dirt fill. Surrounding property on the east, south and west appears to be filled to a level which is higher in elevation than the Lake Calumet Smelting facility. The property to the north appears to be level with or slightly lower in elevation than the Lake Calumet Smelting property. The terrain of the property is flat with partially to heavily vegetated areas in the southeast corner, and in the northwest quarter of the facility. Vegetated areas consist of various types and sizes of grasses, weeds, and trees consistent with the vegetation along the perimeter of the facility. Grass and weeds associated with the vegetated areas are sparse. Tree and brush growth is fairly dense.

The Lake Calumet Smelting Company property is situated in a light to medium industrial area approximately one half mile east of the nearest residential neighborhood. No residential dwellings, schools or daycare facilities are within two hundred feet of the property. Within four miles of the property, land use consists primarily of residential and manufacturing/light to medium industrial with some commercial/retail also scattered throughout. At least seven grade schools are within one mile (5280 feet) of the property. All schools are located north, northwest, west, and southwest of the property at a distance between one-half mile (2640 feet) and one mile.

The property can be accessed by vehicle from the south through a gate in the south fence. Access by pedestrian traffic can be gained from the south through the gate or through an area of fence at the southwest corner of the property that has been crushed by falling tree limbs. Fencing is present around the entire perimeter of the property, however, breaches in the fence, other than already noted, may not have been observed during the site reconnaissance.

The surface water runoff route for this property consists of runoff flowing into low areas on the property and ponding, or flowing toward the north side of the property where there appears to be a low area immediately off-site. The low area appears to hold moisture most of the time due to the existence of a heavy growth of Phragmites. Runoff from this location appears to trend toward the east (Lake Calumet), however the route could not be determined at this time. No city street storm drains, curb storm drains, or area drains could be found near the facility.

2.2 SITE HISTORY

There is very little available information regarding the history of the Lake Calumet Smelting Company facility.

An investigation conducted at the State of Illinois Archives revealed no information on the company. There was no information on incorporation or dissolution of the company. The Cook County Clerks office did not have any record of Lake Calumet Smelting Company. A search of Sanborn Fire Insurance Maps, located at the Illinois State Library, indicated that the land bordered by unpaved 119th St. on the north, unpaved S. Champlain Ave. (formerly Stephenson Ave., until about 1940) on the west, a small boat turn-around area east (excavated to

connect to Lake Calumet), and open ground on the south was originally the site of the Illinois Terra Cotta Lumber Company. Sanborn Maps (Appendix A) from 1897 indicate that the company had structures constructed over most of the approximately 5.7 acres delineated above. Structures included an office, eleven kilns, drying rooms, mechanical shop, engine room, and others. Also on the property was a storage yard for lumber and a storage structure for saw dust. No other information was found to indicate when this company began operating at this location. At some point between 1940 and 1950 Illinois Terra Cotta Lumber Company ceased business and some of the site structures were either razed or altered during establishment of Lake Calumet Smelting. Sanborn Fire Insurance Maps spanning a time period from 1936 – 1950 indicate Lake Calumet Smelting was in existence. However, the Standard Metal Directory 1940 Edition has no listing for Lake Calumet Smelting. Also, an aerial photograph taken in 1939/1940 (Figure 4) indicates Illinois Terra Cotta Lumber Company was still occupying the property. This information indicates that at some time between 1940 and 1950 Lake Calumet Smelting Company was established. Exactly how long the company was in existence is not clear. However, based on a Standard Metal Directory 1963 – 1964 Edition it is known that Lake Calumet Smelting was listed as a smelter of secondary lead, tin, babbitt, and solder located at 651 E. 119th, Chicago, Illinois. It is not currently known when the address of the company changed to 11901 S. Champlain Ave, which is the present address.

According to 1897 & 1936 - 1950 Sanborn Fire Insurance Maps some entire structures and portions of other structures built on the Illinois Terra Cotta Lumber Co. were later utilized by the Lake Calumet Smelting Company. Structures utilized on the Lake Calumet property

consisted of three brick buildings. The function of each was listed as storage, factory and vat facilities. Each was constructed of brick with steel frame and steel beam roof supports. The floors were concrete and the roofs were constructed of concrete over steel beams. The inside curtain walls were brick. No information has been found indicating when operations ceased at this facility. At this writing research of property ownership records conducted at the Cook County Assessors office failed to reveal said records. Also at this writing no tax records have been found.

3.0 FIELD INVESTIGATION ACTIVITIES

3.1 FIELD INSPECTION

A Pre-CERCLIS Screening Assessment reconnaissance and evaluation was conducted on August 10, 2004, by personnel of the Office of Site Evaluation of the Illinois Environmental Protection Agency. A site reconnaissance of the Lake Calumet Smelting Company property and the surrounding area was conducted to determine the physical property boundaries and survey the properties at its perimeters. The survey of the surrounding area was done to determine land usage of the neighboring properties as well as any pathway or receptors that potentially may be affected by the site. As mentioned, the site was observed to be flat, with some areas overgrown with vegetation, particularly at the property perimeter, in the southeast corner of the property and in the majority of the northwest quarter of the facility. As indicated in Section 2.1, chain link fence surrounds the facility. At least one breach exists in the fence at the southwest corner. The site may be accessed at this location. Access may also be gained through the gate in the south fence if left open. Although the facility is only about one half mile from the nearest residential area and may be accessible by the public, it is not in a highly accessible location, being separated from the residential areas by major thoroughfares, an interstate highway and various railroad tracks. No structures remain standing with the exception of the former facility's smoke stack. At various locations around the facility small piles of soil or fill material are present. Other piles consist only of bricks, while others consist of brick, concrete blocks, and wood. Along the north edge of the concrete floor and foundation footprint of the former storage building a pile of old railroad ties is present. At one location in the southwest portion of the facility two partially

crushed 55-gallon steel drums were noted. The drums were in various states of deterioration. No material remained inside the drums, nor did it appear to have spilled onto the ground. Two intact poly drums found on their sides in the southeast portion of the facility contained a gray powder material that had also spilled onto the ground. In general the soil/fill surrounding the concrete floor and foundation includes cinders, glass, and debris of various types.

3.2 X-RAY FLUORESCENCE (XRF) SURVEY RESULTS

On August 10, 2004 personnel from the IEPA Office of Site Evaluation collected field based soil and debris data with a Niton 700 Series X-Ray Fluorescence unit (XRF). Nine soil locations were analyzed around the outside of the concrete floor, foundation and surrounding area within the property boundary. In addition to the nine soil locations, one location on the concrete floor of the former structure was analyzed. A variety of material deposited on the concrete prompted analysis of the floor. An aerial photograph of the Lake Calumet Smelting property and surrounding area has been supplemented with all XRF sample locations (Figure 5 XRF Location Map). No particular pattern of contamination emerged from analysis of the sample results, other than contamination is throughout the property and all locations analyzed are well above USEPA Removal Action Levels (RAL's). Contamination was not limited to one particular area, such as immediately adjacent to the former buildings, but was also noted at various locations away from the former structures. Additional information regarding detected contaminants are presented in Section 4.3 of this document as well as in a summary of all XRF readings presented in Table 1.

4.0 INITIAL PATHWAY ANALYSIS

4.1 GROUNDWATER

The Lake Calumet Smelting Company site is situated on relatively flat terrain of surficial fill that covers the Lake Calumet area. Various thicknesses of fill comprise the land surface around Lake Calumet. Surface elevation of the facility is approximately 590 feet above mean sea level. Borings and well logs completed at various times during the 20th Century have indicated fill ranging from approximately two and one half feet thick as near as 500 feet west of Lake Calumet to as much as twenty and thirty feet thick approximately 3000 feet east of the Lake. A general pattern of ten feet or greater of fill is known to exist immediately adjacent to Lake Calumet. Fill beneath the facility is approximately eight to ten feet thick. The two main sources of fill in the Lake Calumet area were slag waste from steel production and dredgings from the deepening and channelization of the Calumet River system. Significant amounts of other solid wastes were also used as fill, such as household trash, fly ash, solid industrial wastes, and demolition debris including bricks, wood, metal scraps, concrete, and cinders. At this facility it appears that waste material from the secondary smelting of lead has been added to the fill previously in place.

Geology of the area consists of unconsolidated lake sediments and glacial tills overlying Silurian dolomite bedrock. The bedrock surface is approximately 65 feet below ground surface beneath the facility and slopes toward the east at about five feet per mile. A few dolomite outcrops exist in the area as evidenced by the Stony Island area three miles north of the facility. The deposits overlying the dolomite generally consist of two till members of the Wedron

Formation. The lower member, the Lemont Drift, ranges in thickness from 0 – 60 feet and is known to be approximately 15 feet thick beneath the facility. The upper member, the Wadsworth Till, ranges in thickness from 0 – 40 feet. Beneath the facility the Wadsworth Till is known to be approximately 40 feet thick. Both of these units are described as gray silty clays with traces of sand and gravel. The upper surface of the till also slopes toward the east, in a similar manner and rate as the bedrock. The unconsolidated lake sediments above the till are of the Equality Formation comprised of beach sands and lacustrine sands, silts, and clays deposited on the floor of Lake Michigan during the post-glacial period following the major drop in water level as the lake went from the glacial Lake Chicago stage to the early Lake Michigan stage. Large sand deposits were brought into the area east and south of Lake Calumet by currents and wave action caused by retreating glaciers. These sand deposits are known as the Dalton Sand Member. The sand pinches out toward the western portion of Lake Calumet as this area was once near the former shoreline of glacial Lake Chicago. The sand in the area beneath the Lake Calumet Smelting facility eroded and was replaced by the Wedron till Formation.

The direction of groundwater flow in the Lake Calumet area is difficult to determine due to the variety of fill material and the intense human activity in the area. However, the Illinois State Water Survey has determined that the general direction of flow is in a radial pattern toward Lake Calumet. During high water episodes groundwater may flow away from the lake area.

Most area residents and businesses obtain their drinking water from the City of Chicago which utilizes Lake Michigan as the sole source of drinking water for the metropolitan area. Surface water intakes are located in cribs placed approximately two miles from shore in Lake

Michigan. Water is pumped to the main filtration plant north of Navy Pier prior to distribution to the metropolitan water systems. There are, however, a few individuals approximately one mile from the Lake Calumet Smelting facility still using ground water wells. These private wells utilize the shallow dolomite aquifer for drinking water supplies. The Illinois State Water Survey (ISWS) database indicates that there are no public water supplies within four miles of the Lake Calumet Smelting property. Approximately 10 private wells exist within a four mile radius of the subject facility. While there is a potential for area groundwater to have been impacted it is unlikely that the surrounding population is being affected by this facility, as the nearest private drinking water well is approximately two and one half miles southwest of the facility.

4.2 SURFACE WATER

The surface water runoff route for this property is described as follows: any excess moisture caused by precipitation flows into low areas on the property resulting in ponding that either evaporates or percolates into the soil on site. If excess moisture runs off site it flows toward the north side of the property where there appears to be a low area immediately off-site. The low area appears to hold moisture most of the time due to the existence of a heavy growth of Phragmites. Runoff from this location appears to trend toward the east (Lake Calumet), however a definite route could not be determined at this time. No city street storm drains, curb storm drains, or area drains could be found near the facility. As indicated on the Lake Calumet USGS topographic map Lake Calumet is 1000 – 1500 feet east of the facility and there are perennial or intermittent waterways within 1.5 miles of the Lake Calumet Smelting property, however no run

off routes have been observed that would transport surface water from the facility to any nearby water body. Therefore, it does not appear that a release to the surface water pathway is a concern associated with this site.

A review of a Federal Emergency Management Agency Flood Insurance Rate Map for incorporated areas of the Lake Calumet area of Cook County (Panel # 170074 0120 B) indicates that the facility is located outside of the 500 year floodplain, a Zone C designation.

4.3 SOIL EXPOSURE

The soil exposure pathway appears to be the primary concern associated with the Lake Calumet Smelting facility based upon information gathered during the August 10, 2004 Pre-CERCLIS Screening Assessment. The facility is located in an urban setting of mixed light - medium industrial businesses with residential properties within one-half mile. While the property is fenced in an effort to deter trespassing, and there are no indications that the property is used for recreational purposes there are, however, several breeches in the fence. Although the nearest residential neighborhoods are at a distance of one half mile and major thoroughfares separate the facility from these neighborhoods there is a moderate probability that the property is used by neighborhood trespassers from time to time. It should be noted that because the facility does not have an abundance of vegetative cover and due to the detection of various heavy metal analytes, in excess of USEPA removal action criteria, on the soil surface and on the floor of the former facility structure the risk of exposure to anyone disturbing the surface of the facility is greatly increased. Because the Lake Calumet Smelting property is as close as one half mile from

some residences, USEPA Removal Action Levels (RAL's) for residential properties are used for evaluation of site conditions and potential for exposure of residents to contaminated soil.

Analysis of XRF samples indicates RAL's for lead (1000 mg/kg) are exceeded in all soil sample location (#166 - #171 and #173 - #175) and also at the one locations (#172) on the floor of the facility's former structure. RAL's for zinc (230,000 mg/kg) are exceeded in one soil sample location (#169). RAL's for arsenic (230 mg/kg) are exceeded in all soil sample location (#166 - #171 and #173 - #175). Reference Figure 5 and Table 1 of this report for XRF sample locations and associated data.

4.4 AIR ROUTE

During the August 10, 2004 reconnaissance a Foxboro Toxic Vapor Analyzer (TVA) was utilized to screen ambient air around the facility, air in the breathing zone, and air near building rubble and drums. All readings registered at background levels of approximately 2.5 units. There are no records, reports or complaints on file of air releases from the facility or odors emanating from the facility. As mentioned previously, the facility has various types of vegetative cover that will assist in preventing some airborne migration of windblown particulates. However, due to the majority of the property being devoid of vegetation wind blown particulates will readily migrate from the facility. Due to the detection of various heavy metal analytes on the soil surface and on the floor of the former site structure, the potential for contaminated airborne particulates to be released via the air pathway is a concern.

5.0 REFERENCES

Bureau of the Census, County and City Data Book, 1990 U.S. Census Data.

Rockford Map Publishers, 1996, Land Atlas and Plat Book, Cook County, Illinois.

Roadcap, George S. & Kelly, Walton R., Shallow Ground-Water Quality and Hydrogeology of the Lake Calumet Area, Chicago, Illinois, Illinois State Water Survey, March, 1994.

Willman, H. B., et al., Handbook of Illinois Stratigraphy, Bulletin 95, pages 97 – 104, Illinois State Geological Survey, 1975.

State of Illinois, Department of Energy and Natural Resources, 1965, Photorevised 1973, Photoinspected 1977, Lake Calumet, Illinois - Indiana, 7.5 Minute Topographic Map.

State of Illinois, Department of Energy and Natural Resources, 1963, Photorevised 1973, Photoinspected 1978, Blue Island, Illinois, 7.5 Minute Topographic Map.

State of Illinois, Department of Energy and Natural Resources, 1968, Photorevised 1980, Calumet City, Illinois, 7.5 Minute Topographic Map.

State of Illinois, Department of Energy and Natural Resources, 1993, Harvey, Illinois, 7.5 Minute Topographic Map.



Figure 1

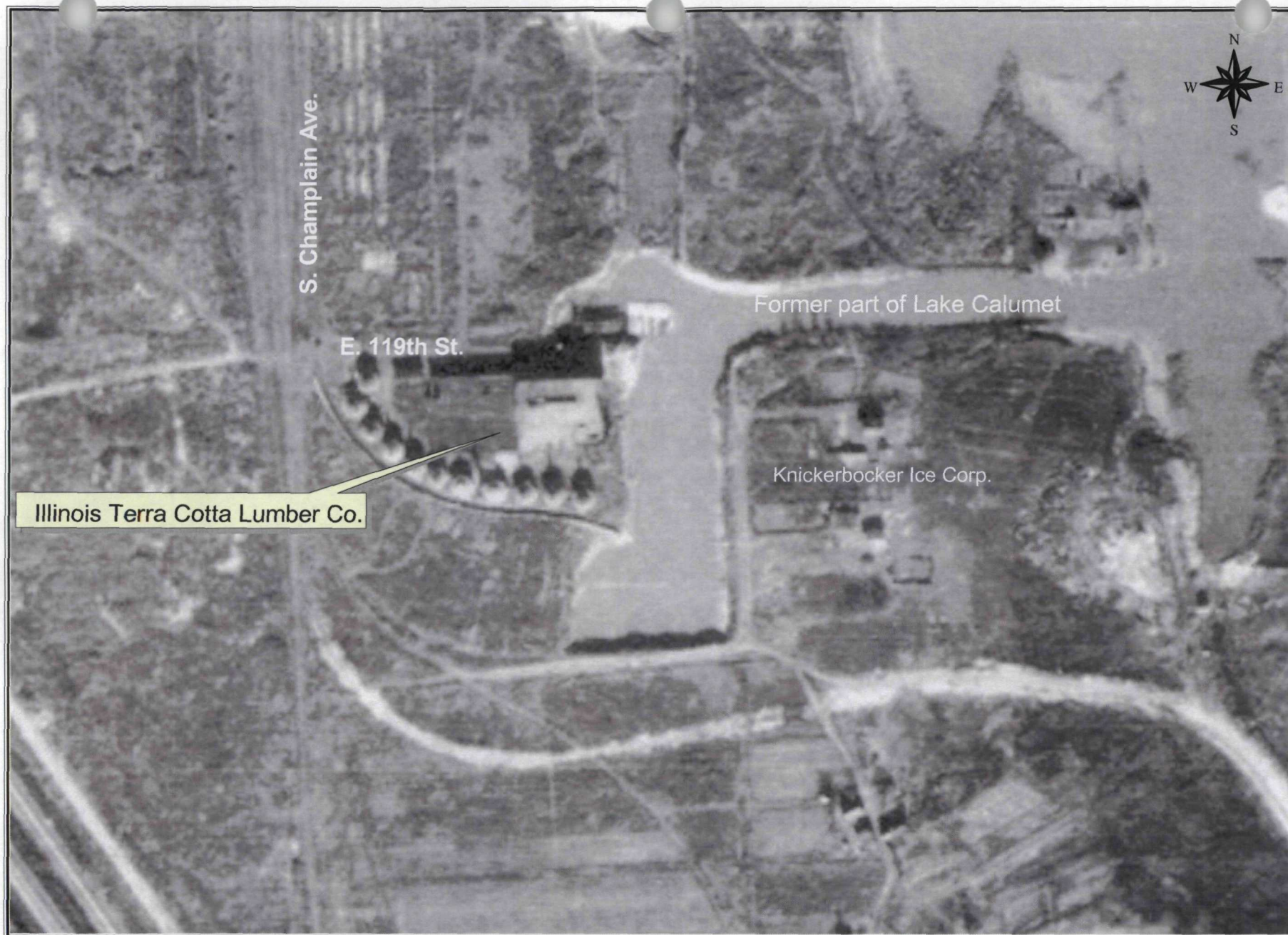


Lake Calumet Smelting

2002 Aerial Photograph

SITE AREA MAP

Figure 3



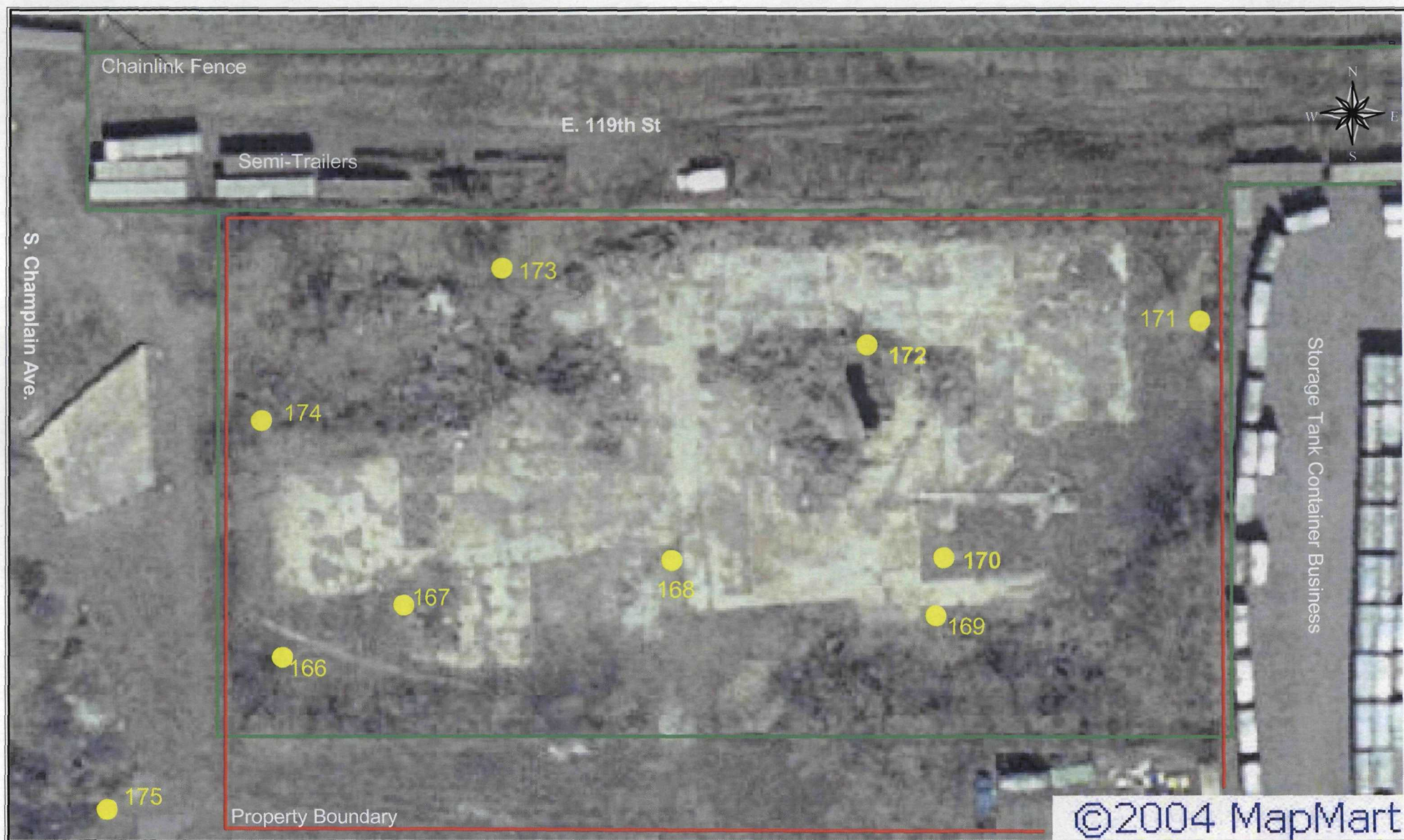
Illinois Terra Cotta Lumber Co.

1939/1940 Aerial Photo

Illinois Terra Cotta Lumber Company

Aerial Photograph

Figure 4



1998 Aerial Photograph

● XRF Location

Lake Calumet Smelting Co.
&
XRF Locations 8-10-04

Figure 5

LAKE CALUMET SMELTING COMPANY

Chicago, Illinois

XRF Screening Data

TABLE 1

XRF Reading Number	USEPA RAL's	166	167	168	169**	170	171	172*	173	174	175
Matrix Units Date	(mg/kg)***	Soil mg/kg 8/10/2004	Soil mg/kg 8/10/2004	Soil mg/kg 8/10/2004	Powder mg/kg 8/10/2004	Soil mg/kg 8/10/2004	Soil mg/kg 8/10/2004	Concrete mg/kg 8/10/2004	Soil mg/kg 8/10/2004	Soil mg/kg 8/10/2004	Soil mg/kg 8/10/2004
ANALYTE		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead	1000	768,000	189,000	72100	Above	88,600	7480	36,100	16,200	49,000	210,000
Zinc	230000	146,000	73,700	21,200	XRF	44,100	5110	30,400	10,200	22,800	133,000
Arsenic	230	36,300	6190	2160	Limits	1800	468	<LOD	521	1520	7420

- All XRF samples of the soil were collected from the soil surface. XRF sample collected on concrete floor surface was formerly within a building.

- * Indicates screening was done on a concrete floor covered with various material.

- **Indicates screening was of grey powder material spilled onto the soil surface from a poly drum.

- ***Residential RALs are being used for comparison due to the facility's proximity to residential neighborhoods.

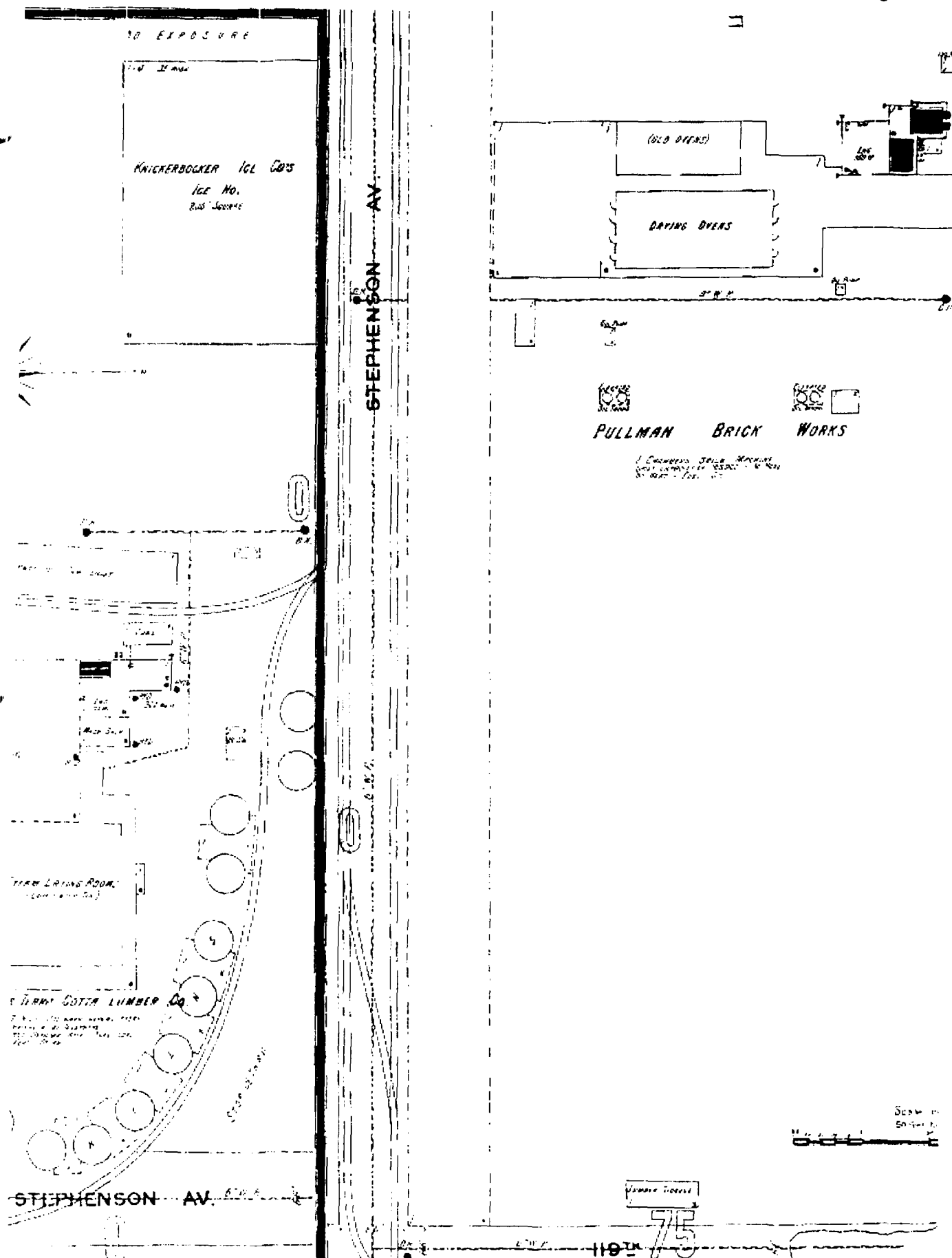
-<LOD = Less than limit of detection.

- Red highlighted results are above RAL's.

APPENDIX A

Sanborn Fire Insurance Maps
1897, 1936 - 1950

1897
SANBORN FIRE INSURANCE MAP



1936 – 1950
SANBORN FIRE INSURANCE MAP

1936-1950

VOL. 42

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